DISCUSSION OUTLINE
MATERIALS
March 5, 2002

Prepared by:
Ricondo & Associates, Inc.

AGENDA

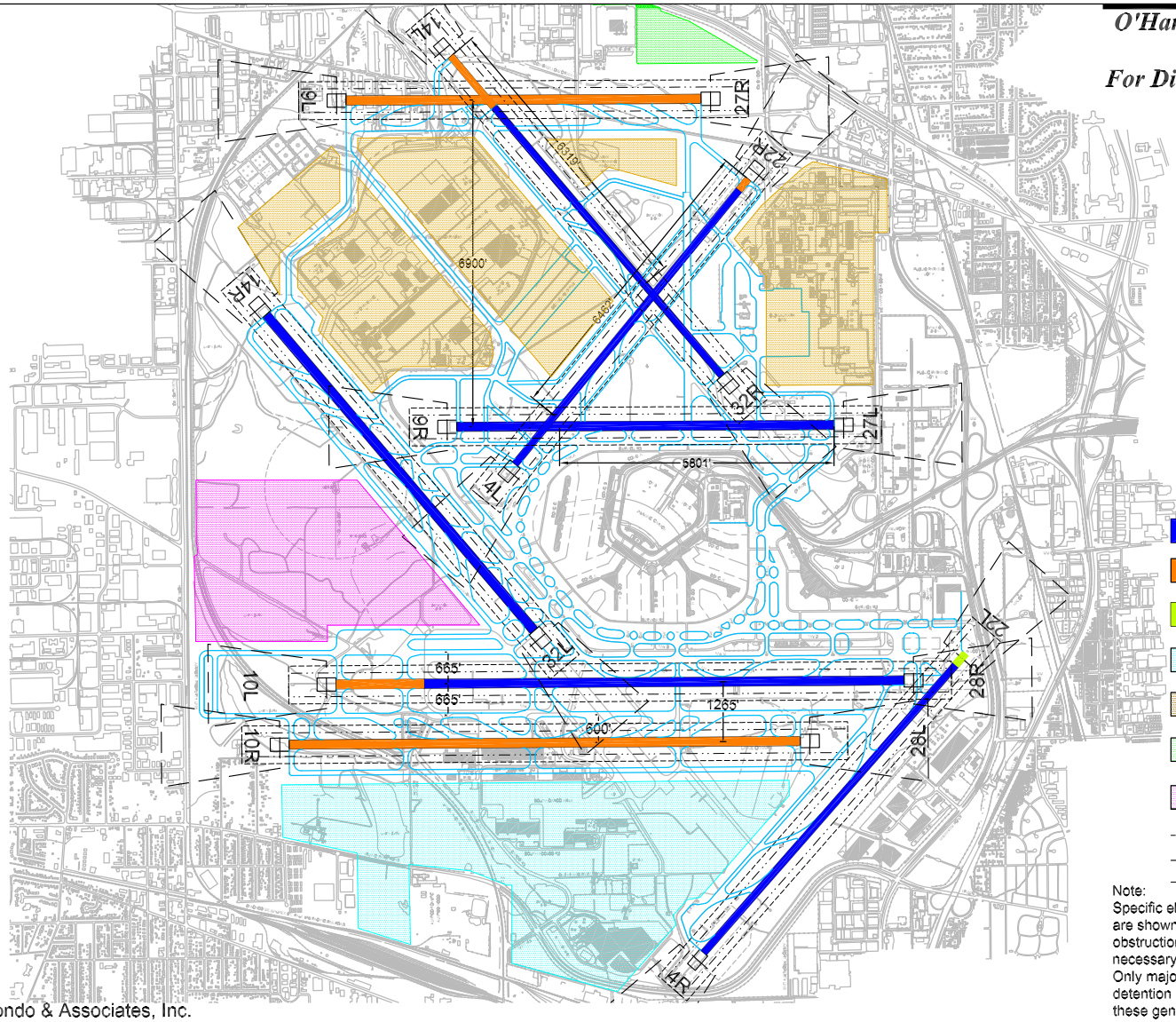
I. LAYOUT OPTION 1

II. LAYOUT OPTION 2

III. LAYOUT OPTION 3

IV. LAYOUT OPTION 4

V. SIMULATION STUDY DESIGN



O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only

RWY Name	Approx. Lengths
4L-22R	7800'
4R-22L	8071'
9L-27R	7500'
9R-27L	7967'
10L-28R	12000'
10R-28L	10800'
14R-32L	8750'
14L-32R	8850'

LEGEND

- Existing Runways
- New or Relocated Runways
- New Runway 22L Runup Taxiway
- Proposed Cargo Development Area
- Proposed Hangar Development Area
- Proposed Other Development Area
- Proposed Terminal Development Area
- Runway Object Free Area
- Runway Protection Zone
- Runway Safety Area

Note:
Specific elements included in this layout concept are shown for illustration purposes only. Further obstruction and operational analyses are necessary.
Only major land uses are shown. Areas for water detention and required uses to be defined within these general areas.

Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit I-1

0 3600

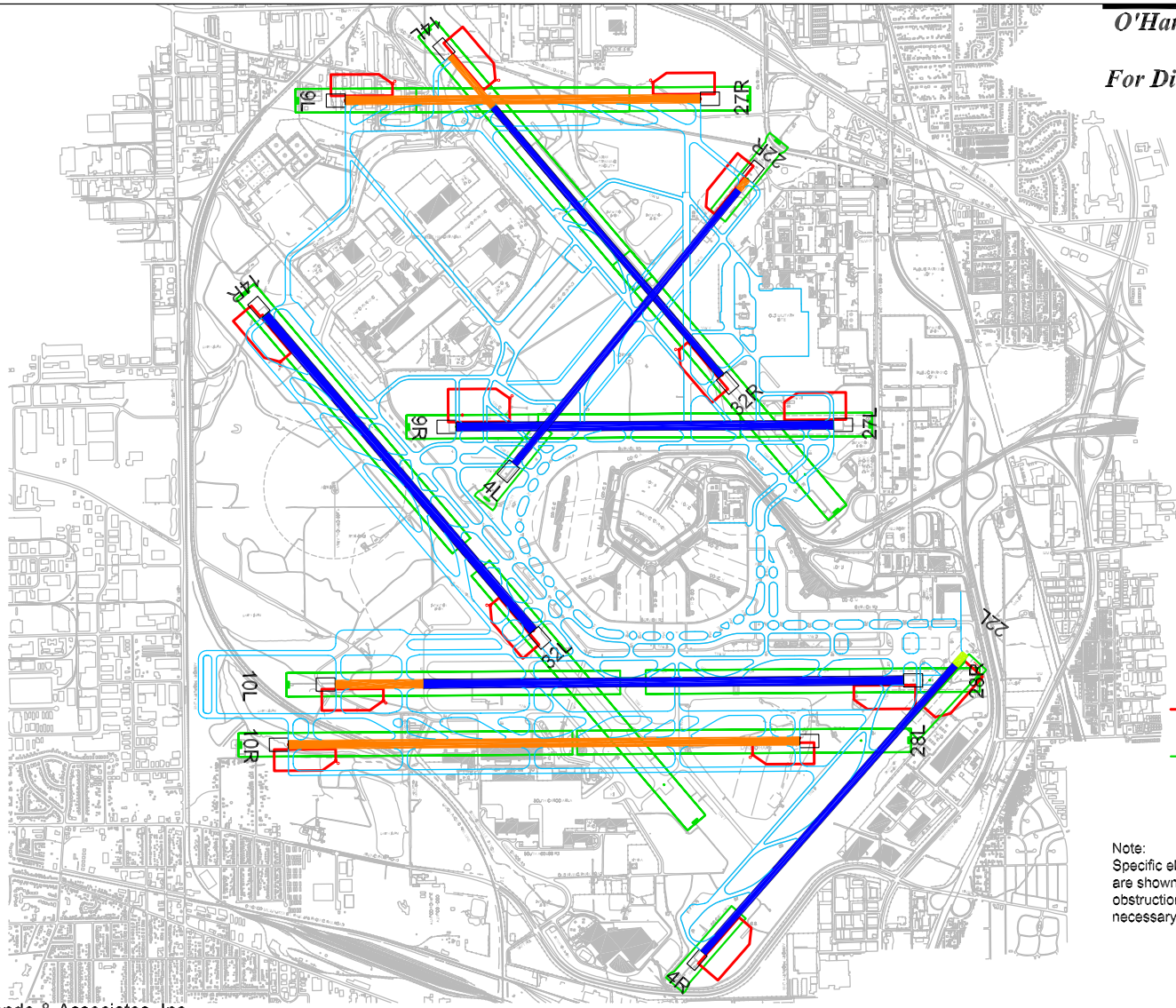
north

Option-1.dwg

Layout Option 1
Land Use Concept

March 5, 2002

O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only



LEGEND

Glide Slope Critical Area

Localizer Critical Area

Note:
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Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit I-2

0 3600

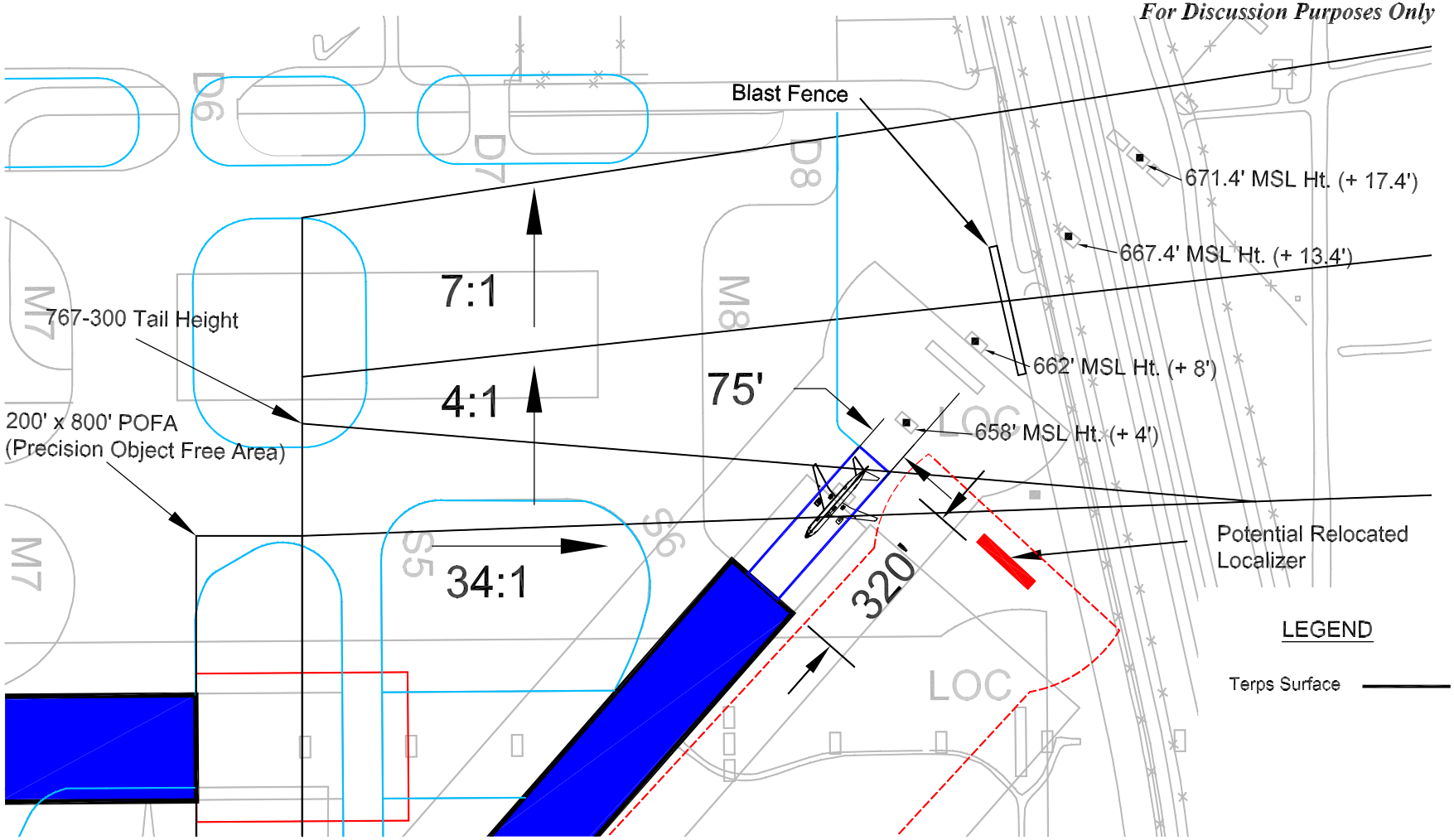
north

Option-1-NAV.dwg

Layout Option 1
Navigation Aid Concept

March 5, 2002

O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only



Source: FAA Order 8260.36A "Civil Utilization of MLS", (New ILS Criteria)
Prepared by: Ricondo & Associates Inc.

Exhibit I-3

0 300 ft.

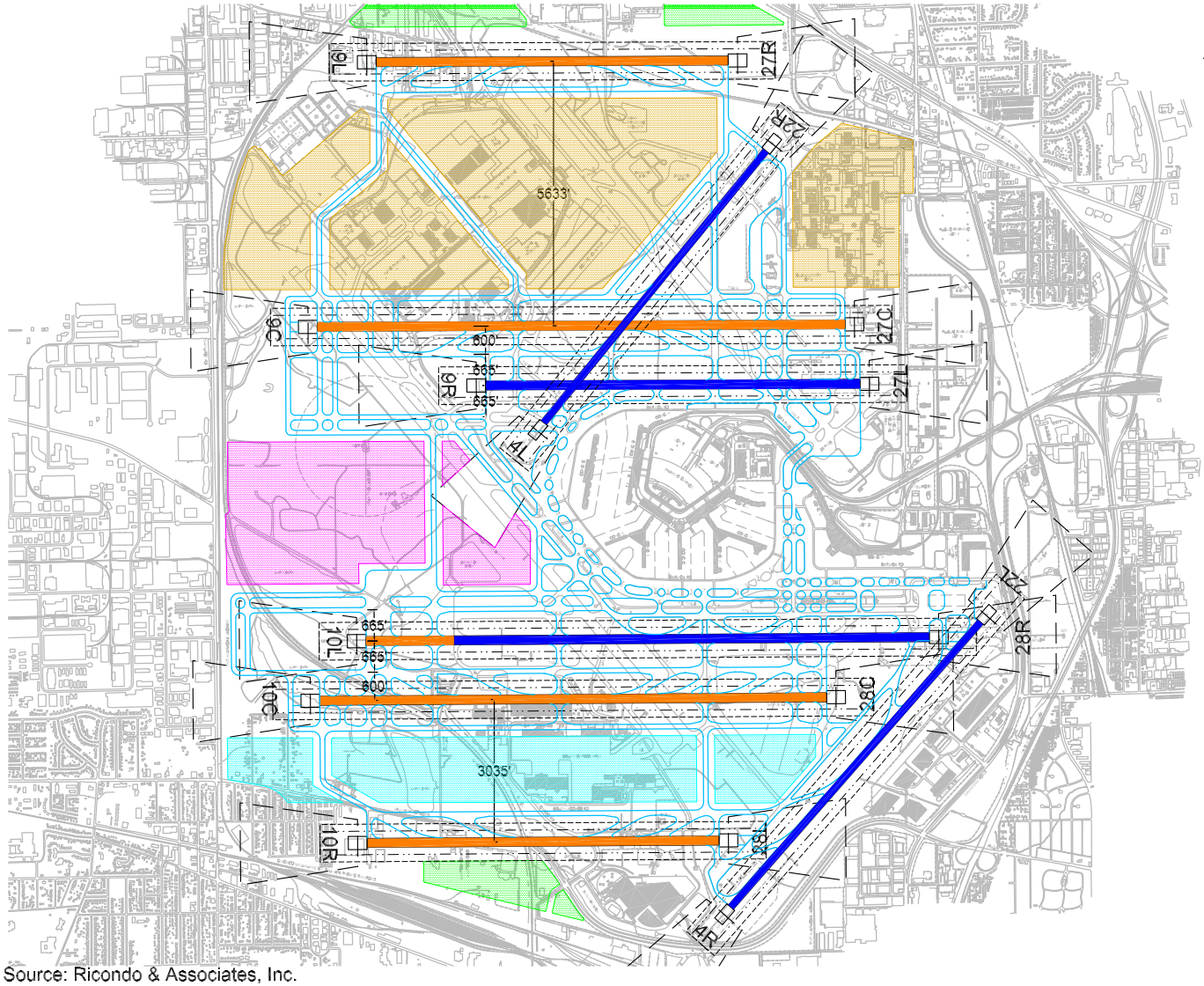
north

ORD-Base-767-300.dwg

Runway 4R-22L
Potential Taxiway Connector

March 5, 2002

O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only



RWY Name	Approx. Lengths
4L-22R	7500'
4R-22L	8071'
9L-27R	7500'
9C-27C	11245'
9R-27L	7967'
10L-28R	12000'
10C-28C	10800'
10R-28L	7500'

LEGEND

- Existing Runways
- New or Relocated Runways
- Proposed Cargo Development Area
- Proposed Hangar Development Area
- Proposed Other Development Area
- Proposed Terminal Development Area
- Runway Object Free Area
- Runway Protection Zone
- Runway Safety Area

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Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit II-1

0 3600

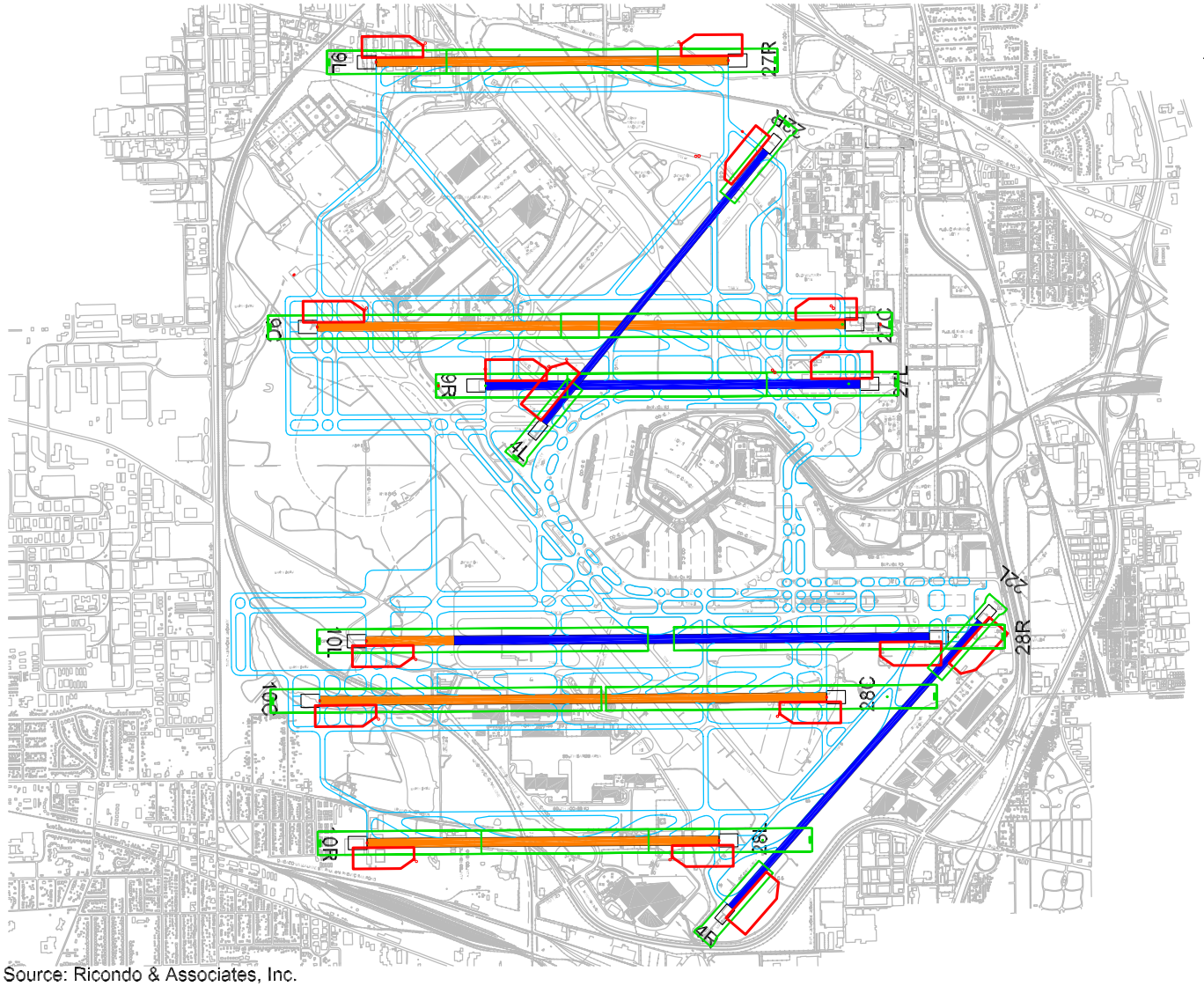
north

Option-2.dwg

Layout Option 2
Land Use Concept

March 5, 2002

O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only



LEGEND

Glide Slope Critical Area

Localizer Critical Area

Note:
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Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit II-2

0 3600

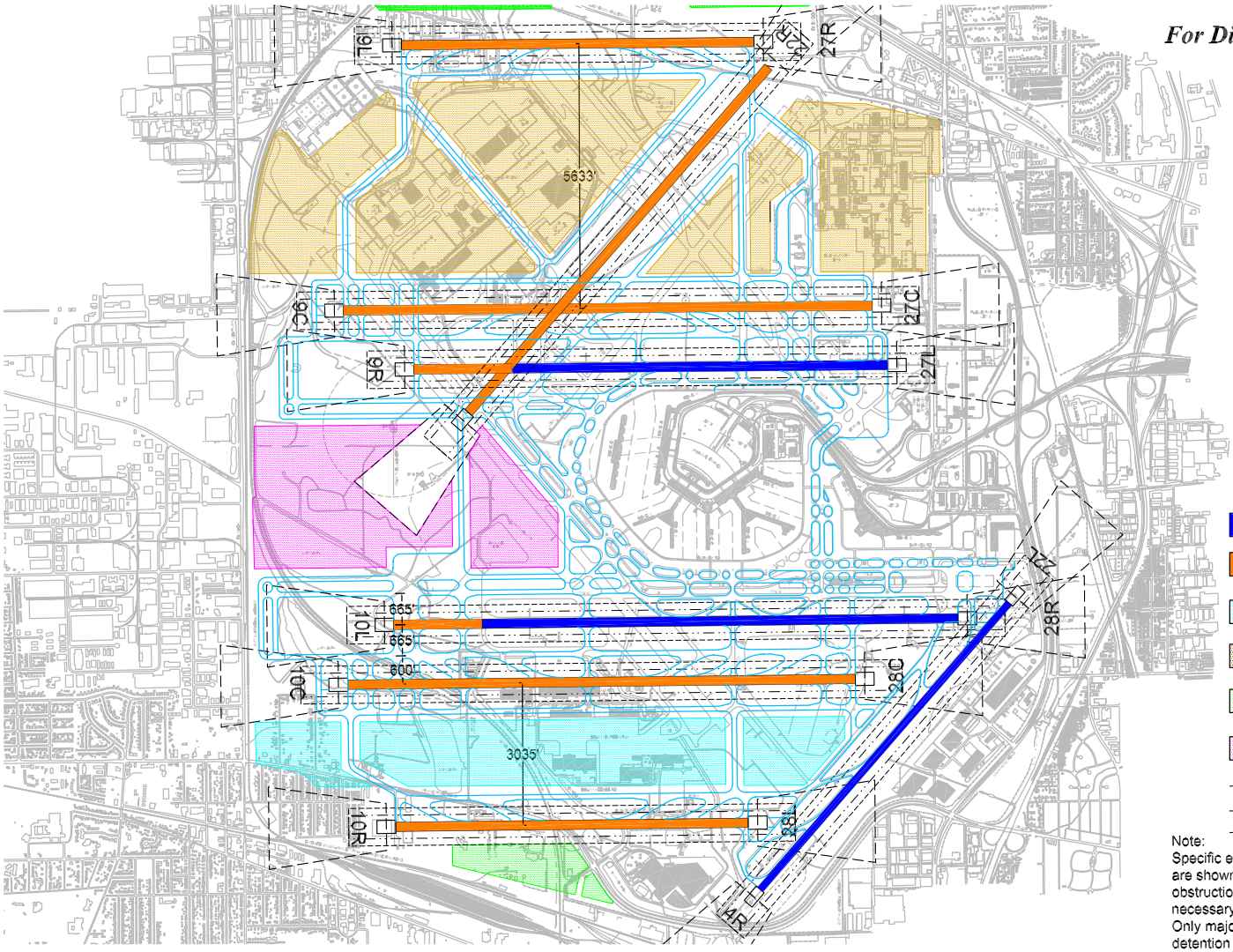
north

Option-2-NAV.dwg

Layout Option 2
Navigation Aid Concept

March 5, 2002

O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only



RWY Name	Approx. Lengths
4L-22R	9734'
4R-22L	8071'
9L-27R	7500'
9C-27C	11237'
9R-27L	10073'
10L-28R	12000'
10C-28C	10800'
10R-28L	7500'

LEGEND

- Existing Runways
- New or Relocated Runways
- Proposed Cargo Development Area
- Proposed Hangar Development Area
- Proposed Other Development Area
- Proposed Terminal Development Area
- Runway Object Free Area
- Runway Protection Zone
- Runway Safety Area

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Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit II-3

0 3600 ft

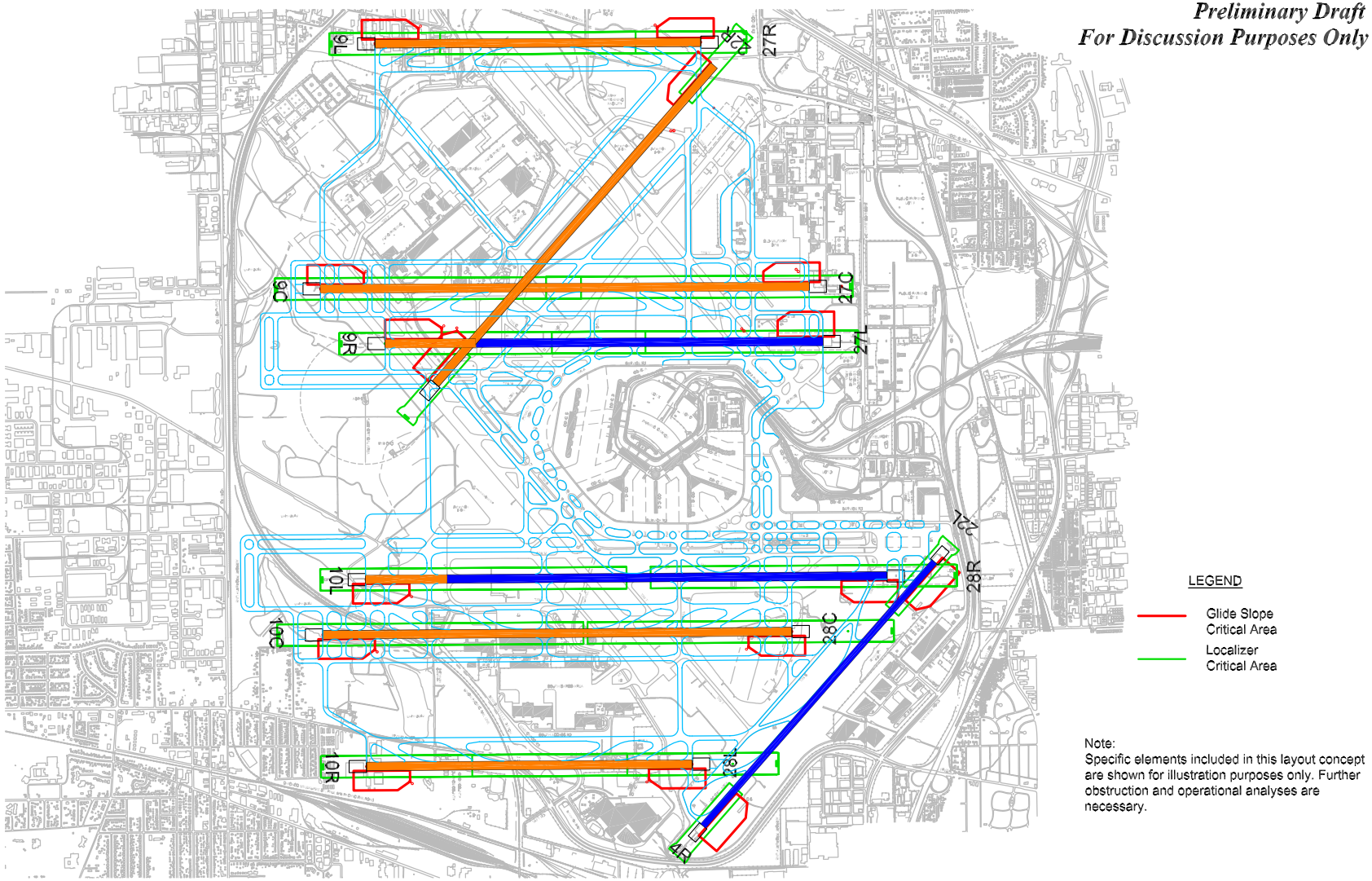
north

Option-2A.dwg

Layout Option 2A
Land Use Concept

March 5, 2002

O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only



Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit II-4

0 3600

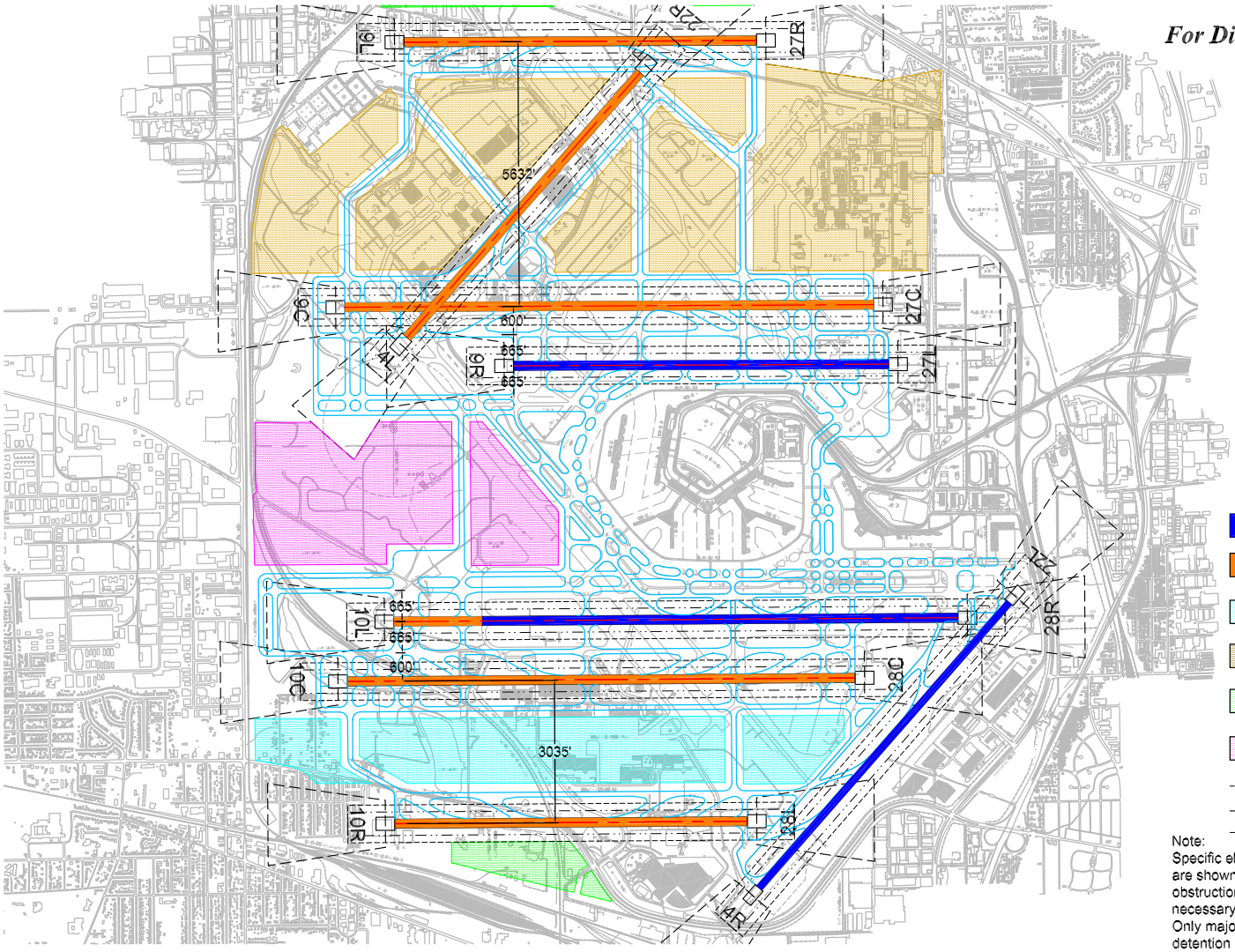
north

Option-2A-NAV.dwg

Layout Option 2A
Navigation Aid Concept

March 5, 2002

O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only



RWY Name	Approx. Lengths
4L-22R	7500'
4R-22L	8071'
9L-27R	7500'
9C-27C	11237'
9R-27L	10073'
10L-28R	12000'
10C-28C	10800'
10R-28L	7500'

LEGEND

- Existing Runways
- New or Relocated Runways
- Proposed Cargo Development Area
- Proposed Hangar Development Area
- Proposed Other Development Area
- Proposed Terminal Development Area
- Runway Object Free Area
- Runway Protection Zone
- Runway Safety Area

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Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit II-5

0 3600 ft

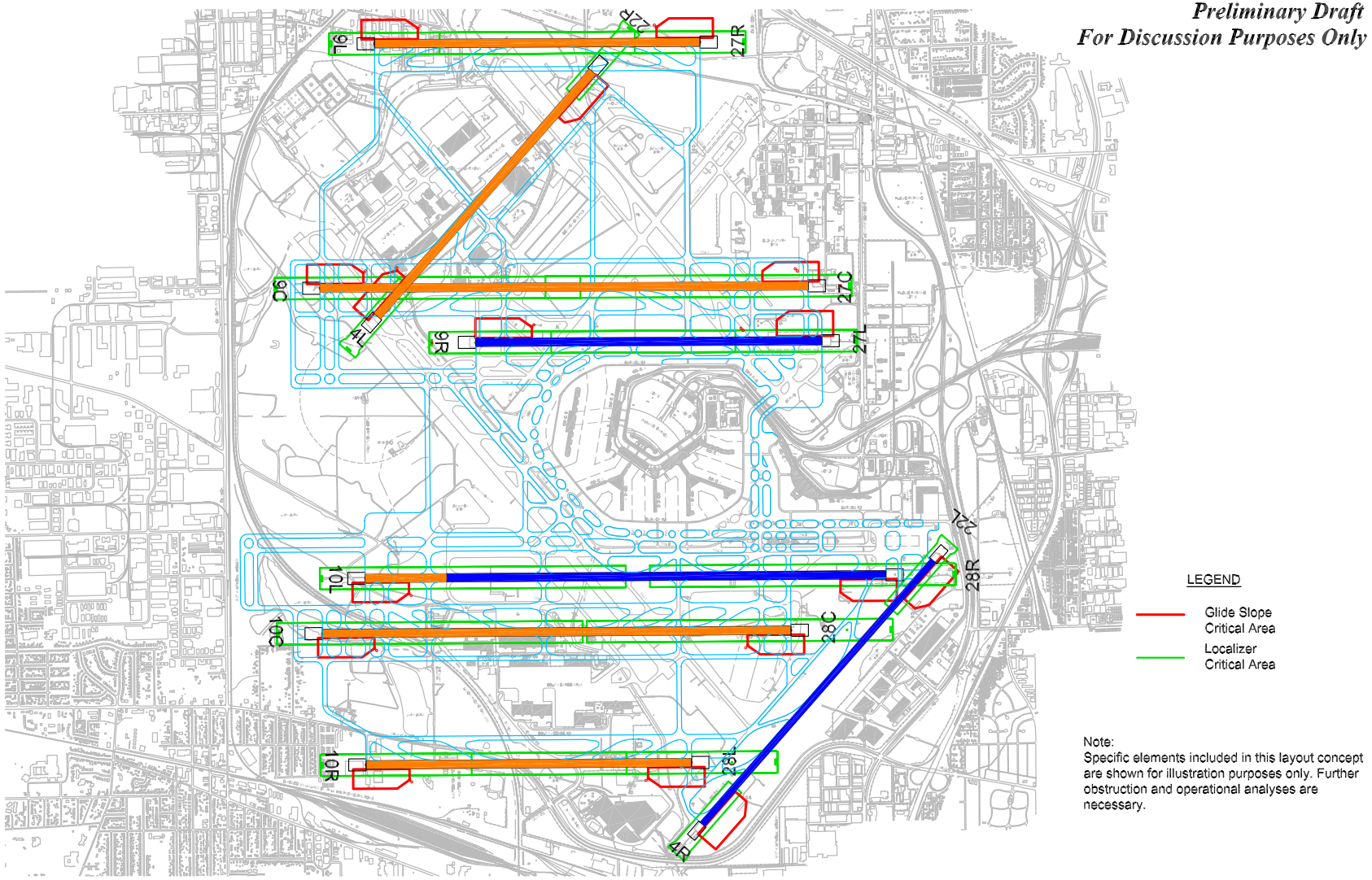
north

Option-2B.dwg

Layout Option 2B Land Use Concept

March 5, 2002

O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only



Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit II-6

0 3600

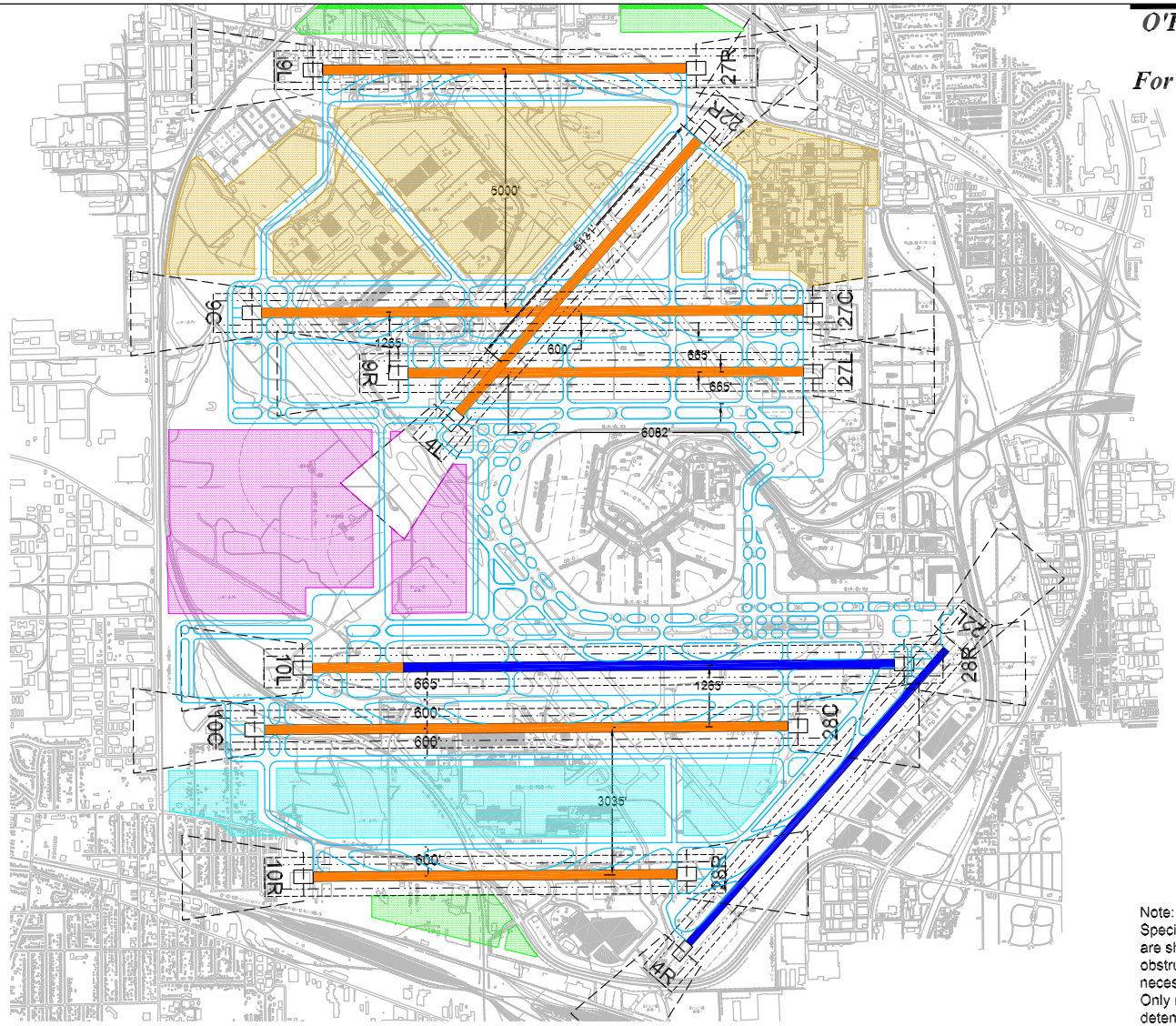
north

Option-2B-NAV.dwg

Layout Option 2B
Navigation Aid Concept

March 5, 2002

O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only



RWY Name	Approx. Lengths
4L-22R	7500'
4R-22L	8071'
9L-27R	7500'
9C-27C	11160'
9R-27L	8146'
10L-28R	12000'
10C-28C	10800'
10R-28L	7500'

LEGEND

- Existing Runways
- New or Relocated Runways
- Proposed Cargo Development Area
- Proposed Hangar Development Area
- Proposed Other Development Area
- Proposed Terminal Development Area
- Runway Object Free Area
- Runway Protection Zone
- Runway Safety Area

Note:
Specific elements included in this layout concept are shown for illustration purposes only. Further obstruction and operational analyses are necessary.
Only major land uses are shown. Areas for water detention and required uses to be defined within these general areas.

Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit III-1

0 3600

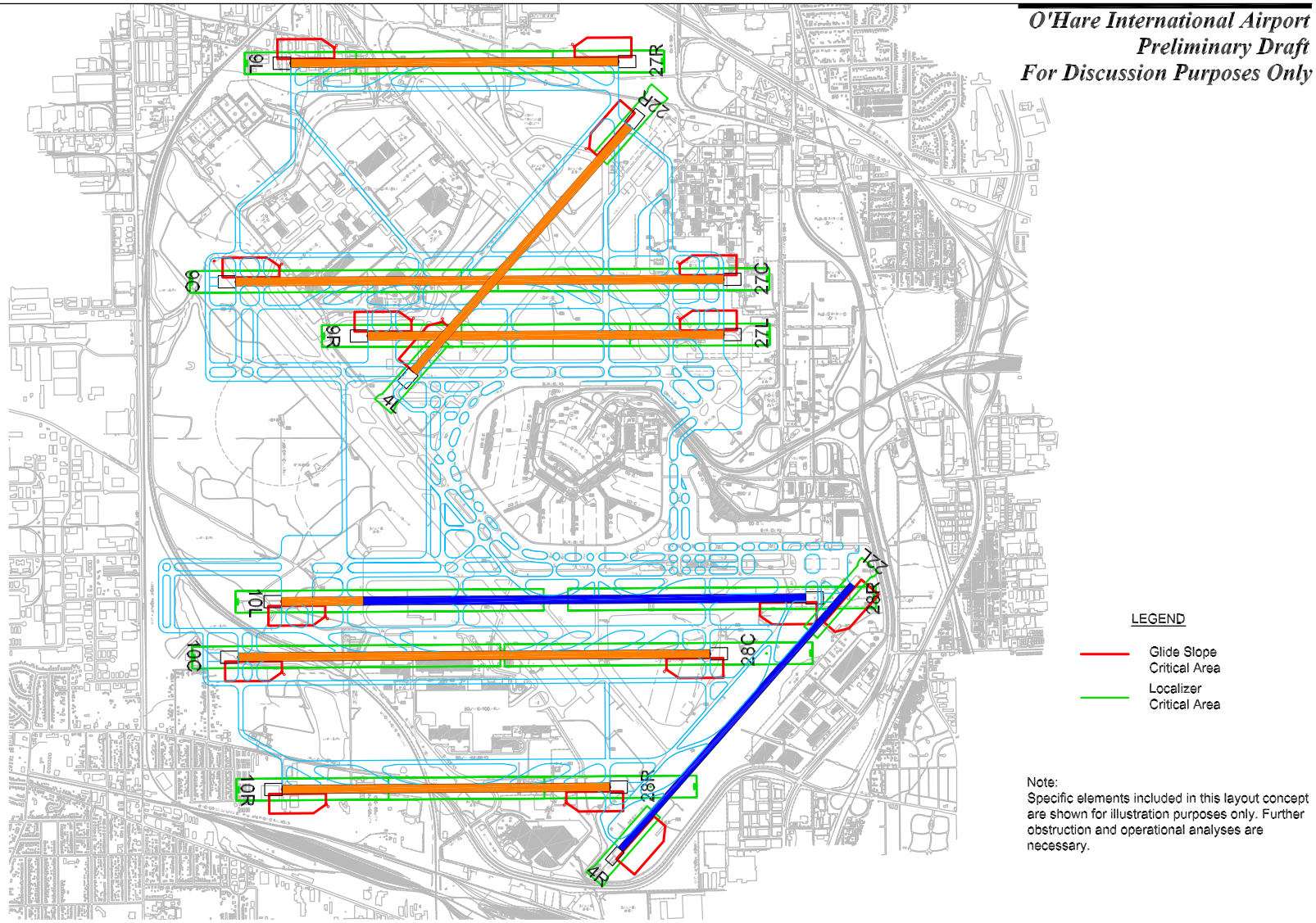
north

Option-3.dwg

Layout Option 3
Land Use Concept

March 5, 2002

O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only



Note:
Specific elements included in this layout concept are shown for illustration purposes only. Further obstruction and operational analyses are necessary.

Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit III-2

0 3600

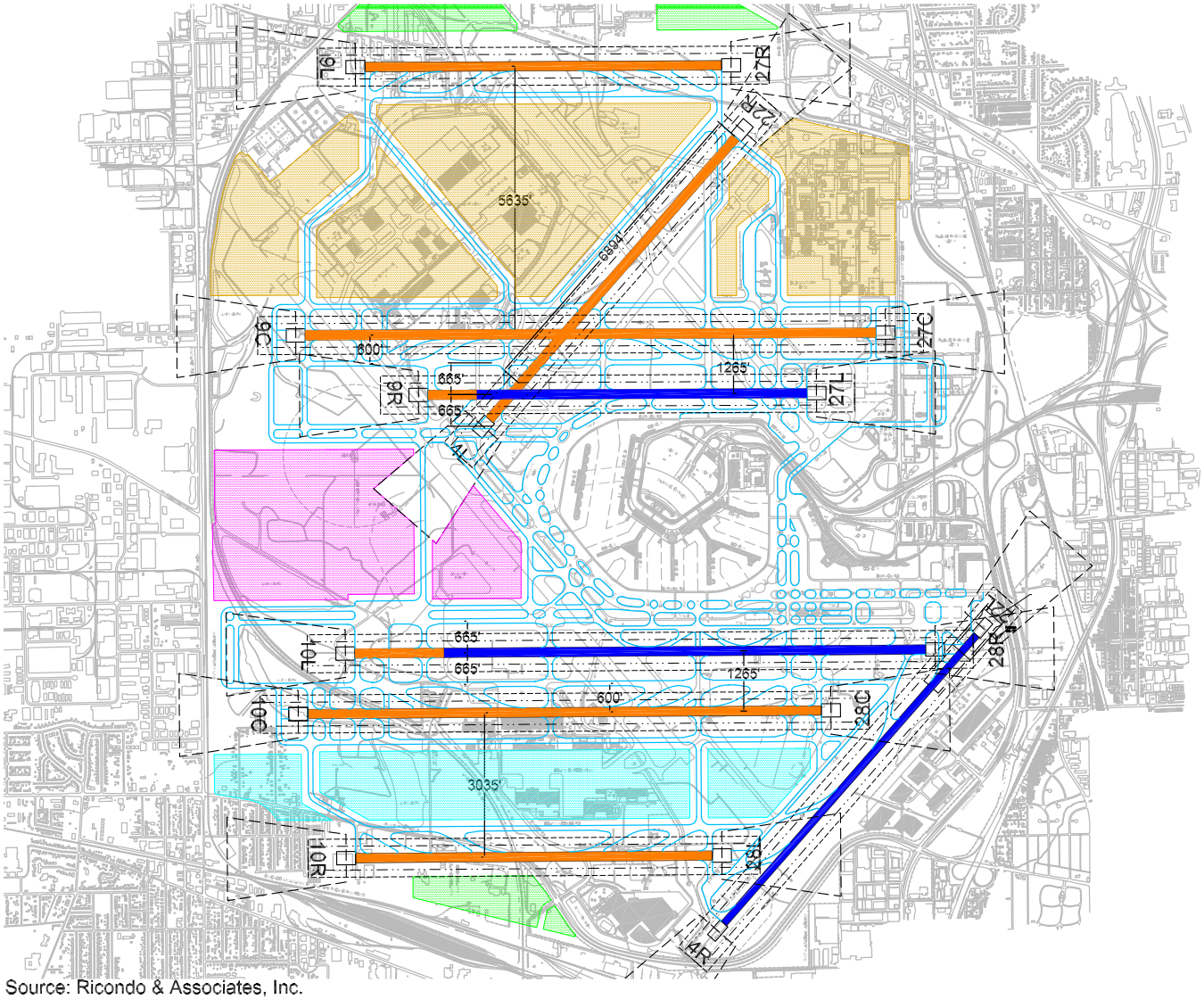
north

Option-3-NAV.dwg

Layout Option 3
Navigation Aid Concept

March 5, 2002

O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only



RWY Name	Approx. Lengths
4L-22R	7875'
4R-22L	8071'
9L-27R	7500'
9C-27C	12000'
9R-27L	7968'
10L-28R	12000'
10C-28C	10800'
10R-28L	7500'

LEGEND

- Existing Runways
- New or Relocated Runways
- Proposed Cargo Development Area
- Proposed Hangar Development Area
- Proposed Other Development Area
- Proposed Terminal Development Area
- Runway Object Free Area
- Runway Protection Zone
- Runway Safety Area

Note:
Specific elements included in this layout concept are shown for illustration purposes only. Further obstruction and operational analyses are necessary.
Only major land uses are shown. Areas for water detention and required uses to be defined within these general areas.

Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit IV-1

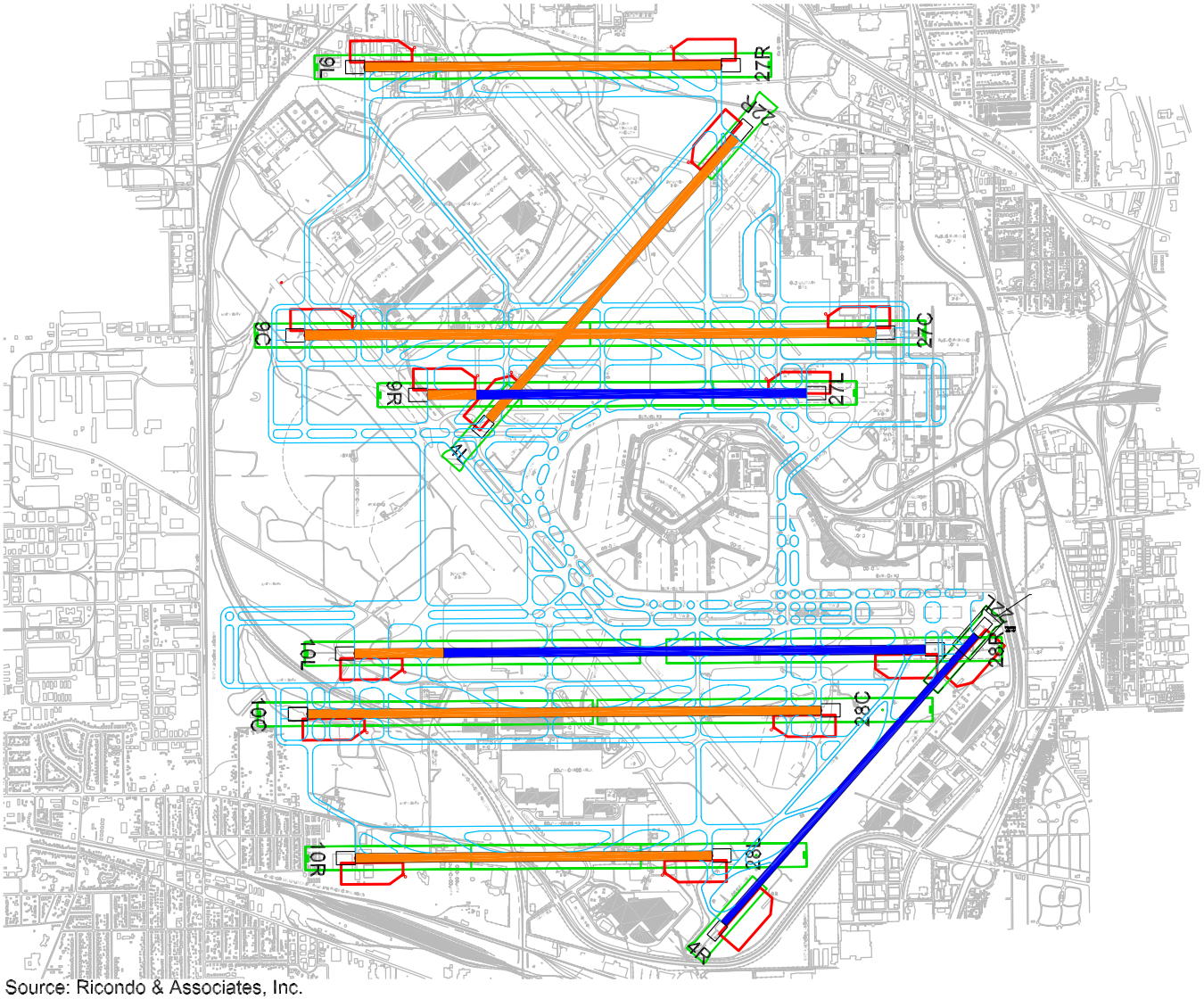
0 3600

north

Option-4.dwg

Layout Option 4
Land Use Concept

March 5, 2002



LEGEND

- Glide Slope Critical Area
- Localizer Critical Area

Note:
Specific elements included in this layout concept are shown for illustration purposes only. Further obstruction and operational analyses are necessary.

Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit IV-2

0 3600

north

Option-4-NAV.dwg

Layout Option 4
Navigation Aid Concept

March 5, 2002

Table V-1
1 of 3
Preliminary Simulation Experimental Design

Experiment	Runway option	Flow	Weather	Runway configuration	Runway use				Demand level	Comments
					Primary		Overflow			
					Arrival	Departure	Arrival	Departure		
1	Existing	East	VFR	Plan X	9R, 4R	9R, 4L, 32L	9L	32R	Existing PAL 1 PAL 2	VFR calibration case
2	Existing	West	VFR	Plan W	27L, 27R	32L, 22L	22R	32R	Existing PAL 1 PAL 2	Runway 32L departures from T10 except for those aircraft requiring full runway length.
3	Existing	South	VFR	Plan B	14R, 22R	27L, 22L	22L	14L	Existing PAL 1 PAL 2	
4	Existing	East	MVFR	Plan X	9R, 4R	9R, 4L	9L	32L	Existing PAL 1 PAL 2	
5	Existing	West	MVFR	Plan W	27L, 27R	32L, 22L	22R	27L	Existing PAL 1 PAL 2	Runway 32L departures from T10 except for those aircraft requiring full runway length.
6	Existing	West	IFR CAT I	Parallel 27's	27L, 27R	32L, 32R, 22L			Existing PAL 1 PAL 2	IFR calibration case
7	Existing	East	IFR CAT II/III	Parallel 14's	14L, 14R	22L, 27L, 9L			Existing* PAL 1* PAL 2*	* Assume minumums below 200 & 1/2. Reduced demand level due to CAT II/III operating conditions.
8	Option 1	East	VFR	Plan X variant	10L, 4R 9L or 14R	9R, 10R		4L	Existing PAL 1 PAL 2	Five parallel runways with Runways 14L-32R and 14R-32L. Potential use of Runway 14R or Runway 9L for arrivals depending on winds.
9	Option 1	West	VFR	Plan W variant	22R, 27L, 28R	22L, 32L		32R, 28L	Existing PAL 1 PAL 2	
10	Option 1	East	IFR	East	9L, 9R, 10L	10R, 4L		22L, 9R	Existing PAL 1 PAL 2	Assumes that Runway 22L departure can position without interfering with Runway 10L navaids and missed approach surfaces.
11	Option 1	West	IFR	West	28R, 27L, 27R	28L, 32L, 22L			Existing PAL 1 PAL 2	Assumes that Runway 22L departure can position without interfering with Runway 28R navaids, missed approach surfaces and RPZ.
12	Option 2	East	VFR	East	9R, 10L, 10R, 9L	4L, 10C	Priority of 9L or 10R based on north or south push	9C, 10L	Existing PAL 1 PAL 2	Six parallel runways with bypass taxiways on west side of the airfield. Use of inboard runways for arrivals. Potential arrival/departure wake turbulence issue due to stagger of Runways 9C and 9R impacting Runway 9C and 9R operations.
13	Option 2	West	VFR	West	28R, 27L, 27R, 28L	27C, 22L	Priority of 27R or 28L based on north or south push	28C	Existing PAL 1 PAL 2	Assumes that Runway 22L departure can position without interfering with Runway 28R navaids, missed approach surfaces and RPZ.

Table V-1
2 of 3
Preliminary Simulation Experimental Design

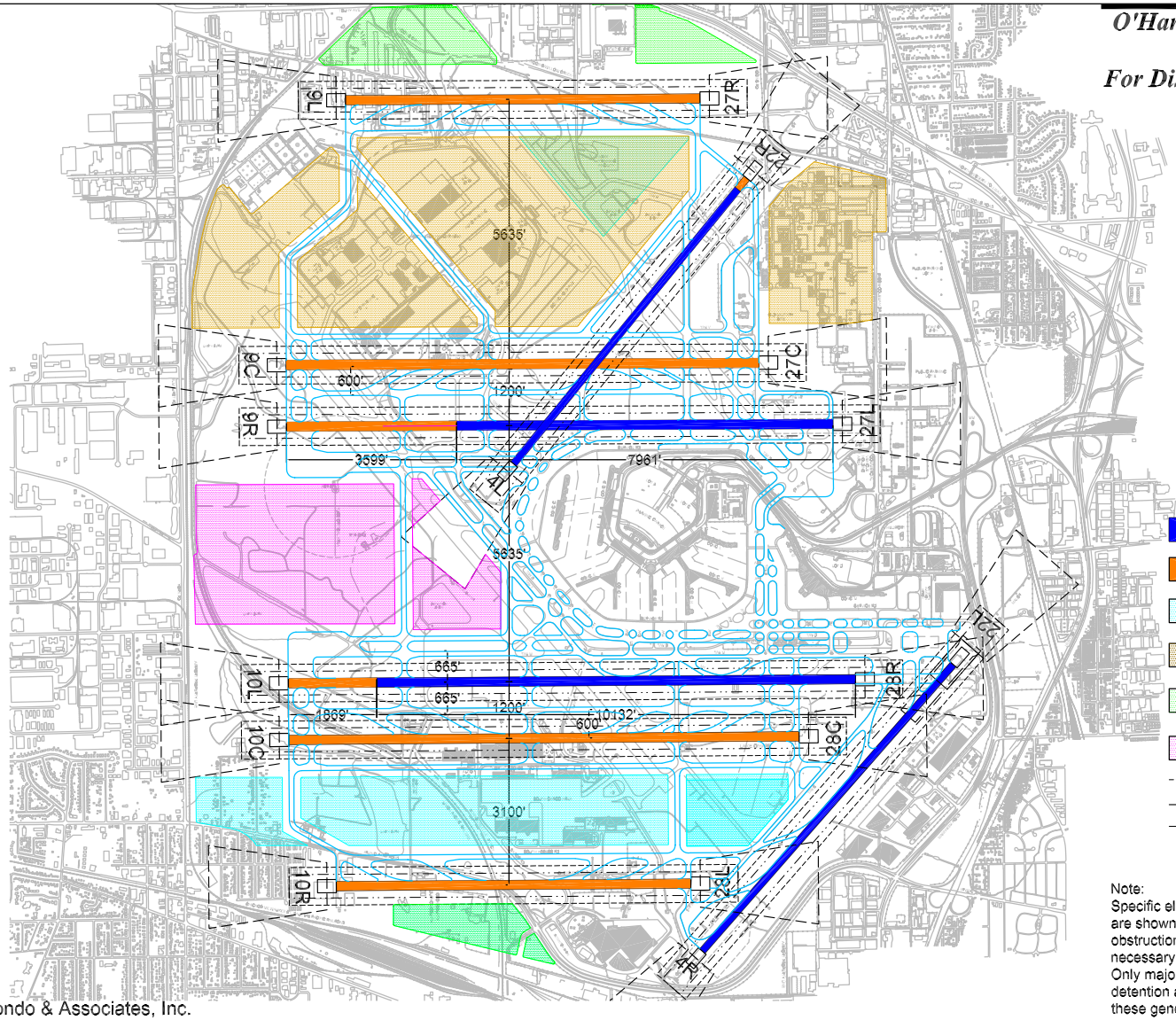
Experiment	Runway option	Flow	Weather	Runway configuration	Runway use				Demand level	Comments
					Primary		Overflow			
					Arrival	Departure	Arrival	Departure		
14	Option 2	East	IFR	East	9R, 10L, 10R, 9L	9C, 10C	Priority of 9L or 10R based on north or south push	4L, 10L	Existing PAL 1 PAL 2	Potential arrival/departure wake turbulence issue due to stagger of Runways 9C and 9R impacting Runway 9C and 9R operations.
15	Option 2	West	IFR	West	28R, 27L, 27R, 28L	27C, 28C	Priority of 27R or 28L based on north or south push	22L, 28L	Existing PAL 1 PAL 2	Assumes that Runway 22L departure can position without interfering with Runway 28R navaids, missed approach surfaces and RPZ.
16	Option 2A	East	VFR	East	9R, 10L, 10R, 9L	9C, 10C	Priority of 9L or 10R based on north or south push	4L, 10L	Existing PAL 1 PAL 2	Six parallel runways with bypass taxiways on west side of the airfield. Relocation of Runway 4L-22R to improve LASHO on Runways 22L and 27L.
17	Option 2A	West	VFR	West	28R, 27L, 22R, 28L	27C, 22L	Priority of 27R or 28L based on north or south push	28C	Existing PAL 1 PAL 2	Runway 27R could be used in place of Runway 22R for arrivals based on acceptance level of LASHO procedure on Runway 22R. Also, see comment for Experiment 13.
18	Option 2A	East	IFR	East	9R, 10L, 10R, 9L	9C, 10C	Priority of 9L or 10R based on north or south push	4L, 10L	Existing PAL 1 PAL 2	Potential arrival/departure wake turbulence issue due to stagger of Runways 9C and 9R impacting Runway 9C and 9R operations. Equivalent to Experiment 14.
19	Option 2A	West	IFR	West	28R, 27L, 27R, 28L	27C, 28C	Priority of 27R or 28L based on north or south push	22L, 28L	Existing PAL 1 PAL 2	Assumes that Runway 22L departure can position without interfering with Runway 28R navaids, missed approach surfaces and RPZ. Equivalent to Experiment 15.
20	Option 3	East	VFR	East	9R, 10L, 10R, 9L	4L, 10C	Priority of 9L or 10R based on north or south push	9C, 10L	Existing PAL 1 PAL 2	Similar to Option 2 with a shift of Runways 9R-27L, 9C-27C, a 4L-22R to the north to provide dual taxiways north of terminal complex.
21	Option 3	West	VFR	West	28R, 27L, 27R, 28L	27C, 22L	Priority of 27R or 28L based on north or south push	28C	Existing PAL 1 PAL 2	Assumes that Runway 22L departure can position without interfering with Runway 28R navaids, missed approach surfaces and RPZ.
22	Option 3	East	IFR	East	9R, 10L, 10R, 9L	9C, 10C	Priority of 9L or 10R based on north or south push	4L, 10L	Existing PAL 1 PAL 2	Potential arrival/departure wake turbulence issue due to stagger of Runways 9C and 9R impacting Runway 9C and 9R operations.
23	Option 3	West	IFR	West	28R, 27L, 27R, 28L	27C, 28C	Priority of 27R or 28L based on north or south push	22L, 28L	Existing PAL 1 PAL 2	Assumes that Runway 22L departure can position without interfering with Runway 28R navaids, missed approach surfaces and RPZ.

Table V-1
3 of 3
Preliminary Simulation Experimental Design

Experiment	Runway option	Flow	Weather	Runway configuration	Runway use				Demand level	Comments
					Primary		Overflow			
					Arrival	Departure	Arrival	Departure		
24	Option 4	East	VFR	East	9R, 10L, 10R, 9L	4L, 10C	Priority of 9L or 10R based on north or south push	9C, 10L	Existing PAL 1 PAL 2	Similar to Option 2 with bypass taxiways on the west side of the south airfield and bypass taxiways on the east and west sides of the north airfield.
25	Option 4	West	VFR	West	28R, 27L, 27R, 28L	27C, 22L	Priority of 27R or 28L based on north or south push	28C	Existing PAL 1 PAL 2	Assumes that Runway 22L departure can position without interfering with Runway 28R navaids, missed approach surfaces and RPZ.
26	Option 4	East	IFR	East	9R, 10L, 10R, 9L	9C, 10C	Priority of 9L or 10R based on north or south push	4L, 10L	Existing PAL 1 PAL 2	Potential arrival/departure wake turbulence issue due to stagger of Runways 9C and 9R impacting Runway 9C and 9R operations.
27	Option 4	West	IFR	West	28R, 27L, 27R, 28L	27C, 28C	Priority of 27R or 28L based on north or south push	22L, 28L	Existing PAL 1 PAL 2	Assumes that Runway 22L departure can position without interfering with Runway 28R navaids, missed approach surfaces and RPZ.
28	Option 5	East	VFR	East	9L, 9C, 10C	9R, 10L	10R	4L, 10C	Existing PAL 1 PAL 2	Six parallel runways with use of inboard runways for departures.
29	Option 5	West	VFR	West	28C, 27C, 27R	27L, 28R, 22L	28L	27C, 28C	Existing PAL 1 PAL 2	If north arrival push (use of Runway 27R), then overflow departure of Runway 28C, else use Runway 27C. Bias to departures on Runway 28C because of south runway spacing. Runway 28R intersection departures to reduce stagger.
30	Option 5	East	IFR	East	9L, 9C, 10C	9R, 10L	10R	9C, 10C	Existing PAL 1 PAL 2	If north arrival push (use of Runway 9L), then overflow departure of Runway 10C, else use Runway 9C. Bias to departures on Runway 10C because of south runway spacing.
31	Option 5	West	IFR	West	28C, 27C, 27R	27L, 28R	28L	22L, 27C, 28C	Existing PAL 1 PAL 2	If north arrival push (use of Runway 27R), then overflow departure of Runway 28C, else use Runway 27C. Bias to departures on Runway 28C because of south runway spacing. Runway 28R intersection departures to reduce stagger.

Notes:
VFR: Minimums at or above 5000 & 5, triple approaches.
MVFR: Minimums at or above 1000 & 3 and below 5000 & 5, triple approaches utilizing simultaneous ILS approaches and with IFR final approach separations.
IFR: CAT 1 minimums at or above 200 and 1/2 and below 1,000 & 3. CAT II/III minimums below 200 & 1/2. Assume transition to CAT II/III runway use when visibility drops below one mile.
Options 2, 3, 4, and 6 assume FAA site specific approval for simultaneous independent quad approaches to parallel runways spaced greater than 5,000, greater than 5,000, and 4,300 feet.
Option 5 assumes FAA site specific approval for simultaneous independent quad approaches to parallel runways spaced greater than 5,000, greater than 5,000, and 3,035 feet.
Further modeling of MVFR and IFR CAT II/III operating conditions for runway configuration options would be conducted after selection of shortlisted alternatives for further evaluation.

Source: Ricondo & Associates, Inc., February 2002.



O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only

RWY Name	Approx. Lengths
4L-22R	7800'
4R-22L	8071'
9L-27R	7500'
9C-27C	10000'
9R-27L	11560'
10L-28R	12000'
10C-28C	10800'
10R-28L	7500'

LEGEND

- Existing Runways
- New or Relocated Runways
- Proposed Cargo Development Area
- Proposed Hangar Development Area
- Proposed Other Development Area
- Proposed Terminal Development Area
- Runway Object Free Area
- Runway Protection Zone
- Runway Safety Area

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Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit V-1

0 3600

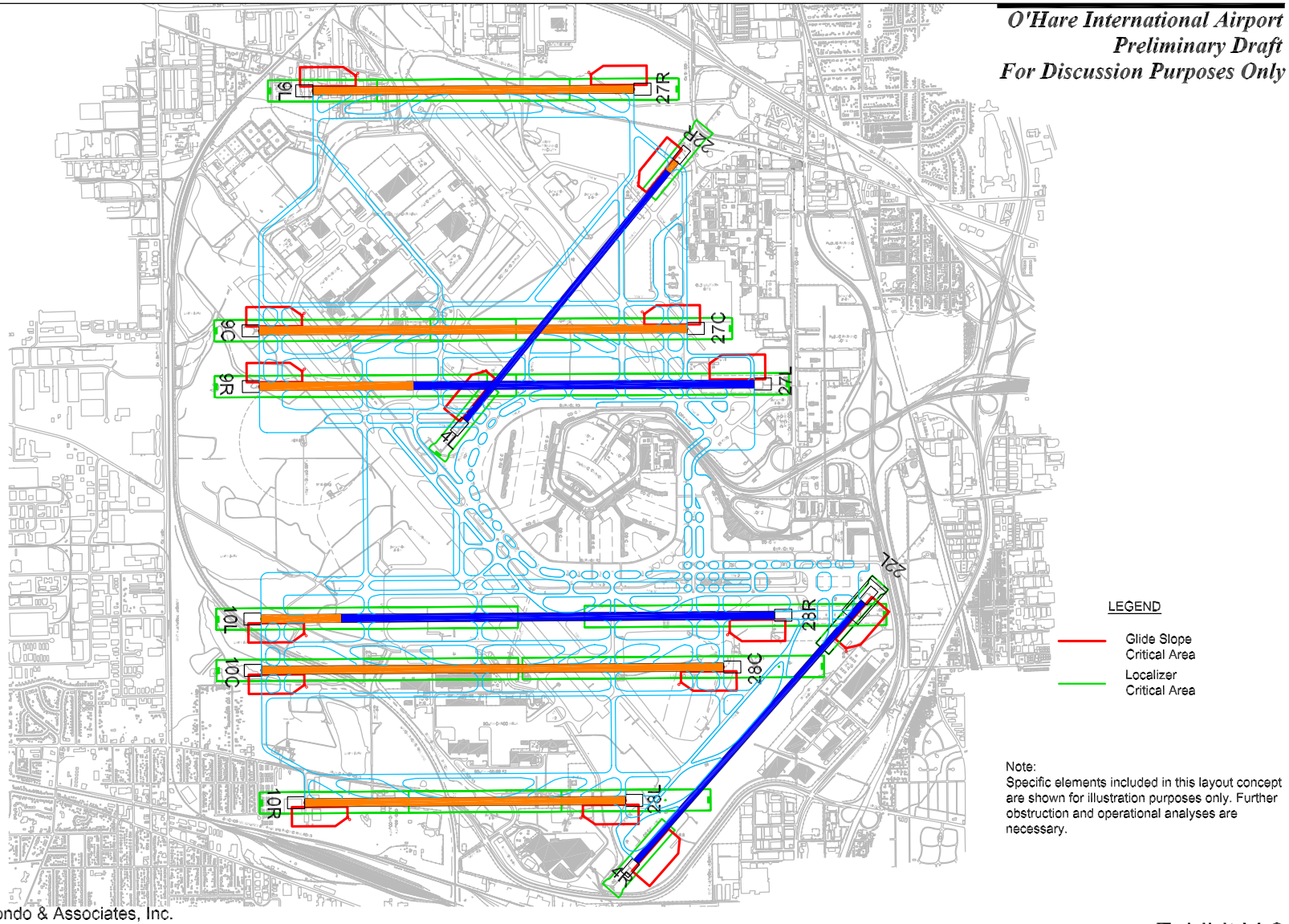
north

Option-5.dwg

Layout Option 5
Land Use Concept

March 5, 2002

O'Hare International Airport
Preliminary Draft
For Discussion Purposes Only



Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit V-2

0 3600

north

Option-5-NAV.dwg

Layout Option 5
Navigation Aid Concept

March 5, 2002